

MATERIAL SAFETY DATA SHEET

SRM Supplier: National Institute of Standards and Technology
Standard Reference Materials Program
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SRM Number: 2721
MSDS Number: 2721
SRM Name: Crude Oil (Light-Sour)

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SECTION I. MATERIAL IDENTIFICATION

Material Name: Crude Oil (Light-Sour)

Description: Petroleum crude oil is a highly complex mixture of paraffinic, cycloparaffinic (naphthenic), and aromatic hydrocarbons, containing low percentage of sulfur and trace amounts of nitrogen and oxygen compounds. The light-sour west Texas oil used for this SRM was passed through a 10 µm filter and blended before being ampouled. A unit of SRM 2721 consists of 5 amber ampoules, each containing approximately 10 mL of crude oil.

Other Designations: Crude Oil (petroleum crude oil; crude petroleum)

Name
Petroleum Crude Oil

Chemical Formula
complex molecule

CAS Registry Number
8002-05-9

DOT Classification: Gas Oil UN 1202

Manufacturer/Supplier: Available from a number of suppliers

SECTION II. HAZARDOUS INGREDIENTS

Hazardous Component	Nominal Concentration (%)	Exposure Limits and Toxicity Data
Petroleum Crude Oil*	~100	ACGIH TWA: 5 mg/m ³
		OSHA TWA: 5 mg/m ³
		Rat, Oral: LD ₅₀ : > 4 300 mg/kg
		Rat, Skin: LD ₅₀ : > 2 g/kg
		Mouse, Oral: LD ₅₀ : > 4 300 mg/kg

*Limits set for mineral oil mists.

SECTION III. PHYSICAL/CHEMICAL CHARACTERISTICS

Petroleum Crude Oil	
Appearance and Odor: yellow to black viscous liquid with varying odor	Melting Point: not available
Relative Molecular Weight: complex molecule	Vapor Pressure: > 0.36 kPa
Specific Gravity (Water = 1): 0.78 to 0.92	Vapor Density: > 1
Boiling Point: < 38 °C	pH: not available
Water Solubility: insoluble	Solvent Solubility: soluble in benzene, chloroform, ether, and organic solvents

SECTION IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point: < 21 °C **Method Used:** PMCC (ASTM D93(A)-00) **Autoignition Temperature:** > 400 °C

Flammability Limits in Air (Volume %): **UPPER:** 16 (approximate)
LOWER: 5 (approximate)

Unusual Fire and Explosion Hazards: Petroleum crude oil is a severe fire hazard. Vapors are heavier than air and may travel a considerable distance to a source of ignition and flash back. Vapor and air mixtures are explosive.

Extinguishing Media: Use regular dry chemical, carbon dioxide, water, or regular foam.

Special Fire Procedures: Fire fighters should wear self-contained breathing apparatus (SCBA) and protective clothing when fighting fires involving materials of this type.

SECTION V. REACTIVITY DATA

Stability: X **Stable** **Unstable**

Conditions to Avoid: Avoid generating dust and contact with incompatible materials.

Incompatibility (Materials to Avoid): Petroleum crude oil is incompatible with oxidizing materials. Petroleum with nitrogen tetroxide is a fire and explosion hazard.

See Section IV: *Fire and Explosion Hazard Data*

Hazardous Decomposition or Byproducts: Thermal decomposition products may include toxic oxides of carbon.

Hazardous Polymerization: **Will Occur** X **Will Not Occur**

SECTION VI. HEALTH HAZARD DATA

Route of Entry: X Inhalation X Skin X Ingestion

Health Hazards (Acute and Chronic): Inhalation of petroleum crude oil may irritate the respiratory tract. Vapors released by various compounds in crude oil may cause asphyxiation and anesthetic or narcotic effects including headache and dizziness. Inhalation may also produce chemical pneumonitis.

Skin and/or eye contact with petroleum crude oil may cause irritation. Repeated or prolonged exposure to the skin may cause allergic reaction or dermatitis. Redness, itching, cracking of the skin, and inflammation are possible. Other adverse effects may include photosensitization, pigmentation, and acneform dermatitis manifested by plugged sebaceous follicles, nodules, and lesions. Repeated or prolonged exposure to the eye may cause conjunctivitis.

Ingestion of petroleum crude oil may cause nausea, vomiting, diarrhea, and other gastrointestinal disturbances. Aspiration into the lungs may cause pneumonitis. Chronic ingestion of petroleum crude oil may result in the systemic effects of vomiting, moderate or extreme bloating, aspiration pneumonia, anorexia, weight loss, mild mental depression, and possibly a decreased plasma level.

Medical Conditions Generally Aggravated by Exposure: This material may aggravate existing respiratory disorders.

Listed as a Carcinogen/Potential Carcinogen:

	Yes	No
In the National Toxicology Program (NTP) Report on Carcinogens		<u> X </u>
In the International Agency for Research on Cancer (IARC) Monographs	<u> X </u>	
By the Occupational Safety and Health Administration (OSHA)		<u> X </u>

EMERGENCY AND FIRST AID PROCEDURES:

Skin Contact: Remove contaminated shoes and clothing. Rinse affected area with large amounts of water followed by washing the area with soap and water. Obtain medical assistance if necessary.

Eye Contact: Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Obtain medical assistance if necessary.

Inhalation: If inhaled, move the victim to fresh air. If breathing is difficult, give oxygen; if the victim is not breathing, give artificial respiration. Obtain medical assistance if necessary.

Ingestion: If ingestion occurs, wash out mouth with water. Obtain medical assistance if necessary.

TARGET ORGAN(S) OF ATTACK: upper respiratory tract (URT)

SECTION VII. PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken in Case Material Is Released or Spilled: Notify safety personnel of major spills and/or leaks. Shut off sources of ignition. Evacuate all nonessential personnel. Avoid raising dust. Recover small spills with a clean shovel and place into a clean, dry container for later disposal. For larger spills, wet the area with water and dike the material for later disposal. Clean up remaining residue using a high efficiency particulate filter.

Waste Disposal: Follow all federal, state, and local regulations.

Handling and Storage: Persons handling this material should wear an air purifying respirator with a high efficiency particulate filter. The specific respirator selected must be based on contamination levels found in the workplace, must be based on the specific operation, must **NOT** exceed the working limits of the respirator, and must be jointly approved by the National Institute for Occupational Safety and Health (NIOSH) and the Mine Safety and Health Administration (MSHA). Additional protective clothing, such as gloves, lab coats, and splash-proof or dust-resistant safety goggles, should be worn.

NOTE: Contact lenses pose a special problem; soft lenses may absorb irritants and all lenses concentrate them. **DO NOT** wear contact lenses in the laboratory.

Store material in a cool, dry, well ventilated area away from flames, sources of ignition, and incompatible materials.

SECTION VIII. SOURCE DATA/OTHER COMMENTS

Sources: MDL Information Systems, Inc., MSDS *Petroleum Crude Oil*, 18 September 2001.
Merck Index, 11th Ed., 1989.
The Sigma Aldrich Library of Chemical Safety Data, Ed. II, 1988.
Hawley's Condensed Chemical Dictionary, 11 Ed., 1987.

Disclaimer: Physical and chemical data contained in this MSDS are provided only for use in assessing the hazardous nature of the material. The MSDS was prepared carefully, using current references; however, NIST does not certify the data on the MSDS. The certified value for this material is given in the NIST Certificate of Analysis.